

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

11 April 2011

3. Country:

BULGARIA

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Dragoman Marsh Karst Complex

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or
b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
- ii) the boundary has been extended ; or
- iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced**

**** Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of site in the Ramsar List): ;
- ii) an electronic format (e.g. a JPEG or ArcView image) ;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables

Shapefile:

Coordinate system: WGS 84, projection: UTM 35N

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

Main part of the boundary of the Ramsar site is the same as the NATURA 2000 site BG0000322 “Dragoman” proposed under the Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. The north part of the boundary follows the catchment boundary of the Dragoman Marsh and the Tsraklevtsi wet meadows – the crest of the Chepan Mountain. The southeast part of the boundary covers the Bezden Reservoirs, karst springs and Petarch Fishponds. The dry hills in the centre of the Ramsar site influence the ecological character of the wetlands through significant subterranean water flows. The eastern and southern parts of the boundary exclude two areas around Beledie Han village and Slivnitsa town included in the NATURA 2000 site. The excluded areas have no relation to the key wetlands.

The area of the Ramsar site is almost completely included in the NATURA 2000 site BG000322 “Dragoman” and partially overlaps with the NATURA 2000 site BG0002001 “Rayanovtsi”, designated under the Directive 2009/147/EC on the conservation of wild birds.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

WGS 84 - BL

DRAGOMAN MARSH KARST COMPLEX -	42°56`N, 23°1`E
Dragoman Marsh	42° 55`N, 22° 57`E
Aldomirovtsi Marsh	42° 53`N, 22° 59`E
Tsraklevtsi wet meadows	42° 56`N, 23° 9`E
Petarch fishponds	42° 51`N, 23° 7`E
Bezden Karst Springs	42° 52`N, 23° 5`E
Chepan Mountain	42° 56`N, 22° 57`E

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

Dragoman Marsh Karst Complex lies in west Bulgaria, Sofia district, and in four municipalities: Dragoman, Godech, Slivnitsa and Kostinbrod. The site is situated about 30 km from the capital Sofia, about 1 km from the town of Dragoman and 2 km from the town of Slivnitsa. The site is in direct proximity to the Sofia – Belgrade international E80 motorway.

10. Elevation: (in metres: average and/or maximum & minimum)

Mean elevation is 850 m a.s.l. (range 700 – 1206 metres)

11. Area: (in hectares) 14 967 ha.

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Dragoman Marsh Karst Complex is the only one of its kind in Bulgaria and one of the few on the Balkan Peninsula. It includes limestone hills with depressions between them where wetlands are formed. The whole karst complex is located south of the 20 km long ridge of the Chepan Mountain, which forms part of the Stara Planina Mountain range. The highest peak is Petrovski Krast (1206 m.a.s.l.).

The Ramsar site is characterized by very rich biodiversity - includes nesting sites of rare and threatened birds and relict localities of marsh and bog plants. The wetlands include the large Dragoman and Aldomirovtsi marshes, wet meadows, some smaller wetlands and some human-made ones. Dragoman marsh is the biggest limestone marsh in Bulgaria - now its area covers about 400 ha. Aldomirovtsi Marsh (120 ha) is linked to it through subterranean waters and was declared a protected area in 1989. Very specific is the region close to the village of Tsraklevtsi – a variety of different wet grasslands.

Several karst springs close to Bezden village provide water to two artificial lakes and the Blato River. In the southeast part of the site next to the Blato River are located the Petarch Fishponds, which provides very good conditions during bird migration and has a great potential for wetland restoration. The area around the wetlands is mainly agricultural land (arable land, meadows and pastures), part of which is temporarily flooded by the spring rains and melting snow.

In the 1930-50s drainage channels and pump stations were built to drain part of the wetlands. The life in the Dragoman Marsh disappeared for decades. But in the 90s these facilities stopped working and the wetlands have been quickly restored.

In the whole proposed area 256 species of birds (61% of Bulgarian avifauna) are registered, 9 amphibians, 9 reptiles, 23 mammals and 180 vascular plants. In the Chepan Mountain and surrounding karst hills there are many rare, Bulgarian and Balkan endemic plant species. The area has many butterfly and dragonfly species of European and world importance.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 1

The Dragoman Marsh Karst Complex contains the last conserved karst marshes in Bulgaria and one of the few on the Balkan Peninsula – Dragoman and Aldomirovtzi Marshes.

The vast wet grasslands around the marshes and also in the eastern part of the complex are unique because of their natural flooding regime and their relict flora - one of the best examples in the Continental biogeographic region.

The complex shelters vast diversity of plants and animal species characteristic and rare for the region. Some of the plant formations and plant species are typical for the Boreal region and Northern Europe and their existing on a low altitude in South-Eastern Europe is of high conservation value.

The typical for the wetlands are the aquatic communities. There is a prevalence of the reed beds and reed mace beds as well as the communities of tall *Cyperaceae* species. These are surrounded by a rich complex of different types of meadows. Some of the wetlands are the very rare in Southern Europe alkaline fens with the relict localities of some Boreal species. A very important fact is the dynamic of the water quantities, which is a reason of seasonally and yearly changes in the areas covered by the typical wetlands and the meadows.

The water influxes from the closed basins of the marshes and the wet meadows and comes out to the surface as karst spring with high water quality. The springs are important source of potable water.

The following wetland related habitats are included in the Annex I of the Habitats Directive 92/43 EEC:

3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;

3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation;

6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*);

6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*);

7220 * Petrifying springs with tufa formation (*Cratoneurion*);

7230 Alkaline fens;

Criterion 2

The Dragoman Marsh Karst Complex plays an important role in the conservation of globally threatened species and ecological communities, which have very limited distribution and have been influenced by many negative human impacts. After the extensive drainage and ploughing activities throughout the country during the 20th century, very few natural wetlands remained, especially in inland Bulgaria away from the Danube and the Black Sea Coast. The total area of the wetlands in Bulgaria has decreased 20 times from the beginning of 20th century. The karst wetlands in Bulgaria were completely destroyed and the Dragoman Marsh Karst Complex is the only one survived. (In the 1930-50s drainage channels and pump stations were built to drain part of the wetlands and the life in the Dragoman Marsh disappeared for decades, but in the 90s these facilities stopped working and the wetlands have been quickly restored.)

The following bird species from the IUCN Red List categories have been recorded in the site (17 species): *Pelecanus crispus* (VU); *Aythya nyroca* (NT); *Oxyura leucocephala* (EN); *Neophron percnopterus* (EN); *Circus macrourus* (NT); *Aquila heliaca* (VU); *Falco naumanni* (VU); *Falco vespertinus* (NT); *Falco cherrug* (EN); *Crex crex* (NT); *Otis tarda* (VU); *Limosa limosa* (NT); *Gallinago media* (NT); *Numenius arquata* (NT); *Coracias garrulus* (NT); *Acrocephalus paludicola* (VU); *Ficedula semitorquata* (NT). (NT – near threatened; VU – vulnerable; EN – endangered; according to IUCN 2010. IUCN Red List of Threatened Species. Version 2010.2. <www.iucnredlist.org>).

108 species of birds are included in the Bulgarian Red Data Book (new edition, in press).

80 species are included in the Annex I of the Birds Directive 2009/147/EC.

For more information please see Annex 1.

There are about 30 plant species, which are included in the Red Data Book of Bulgaria, Red Lists of the Bulgarian flora. 10 of them are endemics to Bulgaria or the Balkan Peninsula, like *Tulipa urumoffii* Hayek., *Erysimum comatum* Panč., *Astragalus wilmotianus* Stoj., *Edraianthus serbicus* (Kern.) Petr., *Jurinea țzar-ferdinandii* Dav., etc. See also point 21.

The *Aldrovanda vesiculosa* (re-introduced), *Himantoglossum caprinum* and *Caldesia paranssifolia* are included in the Annex II of the Directive 92/43 EEC and in the Annex I of the Bern Convention.

There are 43 mammal species recorded up to now in the proposed area. 8 species are from the IUCN redlist (*Barbastella barbastellus*, *Myotis bechsteini*, *Rhinolophus mehelyi*, *R. Euryale*, *Nannospalax leucodon*, *Spermophilus citellus*, *Vormela peregusna*, *Lutra lutra*) and 17 from Annex 2 of the Habitats Directive 92/43 EEC.

Amphibians - 9 species found and 2 of them are from Annex II from Directive 92/43 EEC – *Triturus karelinii* and *Bombina variegata*.

Reptiles – 11 species are found in the area as 2 of them (*Emys orbicularis*, *Testudo hermanni*) are from Annex II from Directive 92/43 EEC and IUCN Red List.

The area is an Important Butterfly area and has many butterfly and dragonfly species of European and world importance. 3 of them are NATURA 2000 species from Directive 92/43 EEC - *Lycaena dispar*, *Polyommatus eroides* and *Eriogaster catax*.

For more information please see Annex 3.

Criterion 3

The complex is a “hotspot” of biological diversity and is evidently species-rich. The different types of wetlands and the surrounding barren rocky ridges sustain rich biological diversity, mainly in terms of various habitat types, plant and bird species.

256 species of birds have been recorded so far in the area, which forms about 61% of the Bulgarian avifauna. Of these 148 are ever-recorded as breeding (Please see Annex 1).

Up to date 9 species of amphibians, 9 reptiles, 23 mammals and 180 vascular plants are recorded in the area.

After the restoration of the Dragoman Marsh an amazing increase of breeding water-related birds was observed. In 1996 only 70 breeding pairs of non-passerines from 11 species were recorded, in 2007 about 900 pairs of non-passerines from 21 species were recorded. (Please see Annex 2).

Similar trend is observed at the Aldomirovtsi Marsh.

In the surrounding karst area of the wetlands, the huge variety of habitats determines lots of species of breeding passerines too, many of which of conservation concern – 5 species of larks (*Lullula arborea*, *Calandrella brachydactyla* and *Melanocorypha calandra* in Annex I of Birds Directive 2009/147/EC), 3 species of shrikes (*Lanius collurio* and *L. minor* in Annex I of Birds Directive 2009/147/EC), 5 species of buntings (*Emberiza hortulana* in Annex I of Birds Directive 2009/147/EC), etc. See also point 22.

The wetlands and the surrounding limestone hills have a very rich flora. The meadows preserve the localities of many relicts and very rare in Bulgaria plant species, whose main ranges are north from the Balkan Peninsula: *Plantago maxima*, *Salix rosmarinifolia*, *Pedicularis palustris*, *Lathyrus palustris*, *Viola pumila*, *Fritillaria meleagroides*. Their extinction will reduce their range of distribution in Europe and will move it in Western and Northern direction.

The low-altitudinal mountain regions in Western Bulgaria (including the region of Dragoman) are relict for the localities of many steppe species, which have survived there during the Holocene invasion of the forests in most parts of Bulgaria. As a result of their long isolation, some of them are endemics on the species or subspecies level. There are more than 10 species, which occur on the Dragoman Marsh Karst Complex, which are endemics for Western Bulgaria and Easter Serbia. Some of them are *Tulipa urumoffii* Hayek., *Erysimum comatum* Panč., *Astragalus wilmotianus* Stoj., *Edraianthus serbicus* (Kern.) Petr., *Jurinea tzar-ferdinandii* Dav., etc. See also point 21.

After its restoration the Dragoman Marsh features the special ecological characteristics to sustain the population of *Aldrovanda vesiculosa* in the medium or long term. It has been successfully re-introduced in 2008 and the marsh is the only locality in Bulgaria and the second known on the Balkan Peninsula. As all other wetlands suitable for *Aldrovanda* have been destroyed or their ecological conditions have changed substantially (Srebarna Lake) the Dragoman Marsh Karst Complex is for now the only hope for the survival of the species in the country.

Criterion 4

The whole area is on the way of the so called “Via Aristotelis” Migratory Pathway, which goes from the Aegean Sea (Eastern Mediterranean), via the western part of Bulgaria (Struma River Valley and Sofia basin) to the north. The wetlands in the area are an important stopover for a number of migrating water birds: *Egretta alba*, *E. garzetta*, *Ardea cinerea*, *A. purpurea*, *Ciconia ciconia*, *C. nigra*, *Plegadis falcinellus*, *Anas platyrhynchos*, *A. crecca*, *A. querquedula*, *A. strepera*, *Aythya nyroca*, *A. ferina*, *Porzana parva*, *P. pusilla*, *P. porzana*, *Rallus aquaticus*, *Fulica atra*, *Gallinula chloropus*, *Limosa limosa*, *Philomachus pugnax*, *Tringa sp.*, *Calidris sp.*, etc The karst stony ridges provide food resources for a number of birds of prey during migration and winter: *Buteo buteo*, *B. rufinus*, *Pernis apivorus*, *Aquila pomarina*, *Circus gallicus*, *Milvus migrans*, *Circus sp.*, *Accipiter sp.*, *Falco sp.* In the past (end of 19th century) the conditions in the area of Dragoman Marsh Karst Complex were suitable even

for breeding of Common Crane *Grus grus* (Dragoman Marsh) or its migration on a large scale (Aldomirovtsi Marsh). Currently the habitats in both large wetlands are largely recovered and the results are evident: breeding of Black-necked Grebe *Podiceps nigricollis* after more than 100 years break in Western Bulgaria, establishment of new heronry, increase in numbers of Great Bittern *Botaurus stellaris*, Ferruginous Duck *Aythya nyroca* etc., breeding of all three *Porzana* species, the only recently proven breeding of Common Snipe *Gallinago gallinago* in the country, increasing number of *Grus grus* sightings during migration (Aldomirovtsi Marsh), etc. For the last two years Great White Egret *Egretta alba* bred in Dragoman Marsh which is the second breeding place after Srebarna Lake. For Ferruginous Duck *Aythya nyroca* and Corncrake *Crex crex* it is one of the most important breeding sites in the country.

Both marshes, Dragoman and Aldomirovtsi, are the largest natural wetlands in Sofia region, which attract a number of water birds by providing mosaic pattern of the habitat – alternating water mirrors, bunches of water vegetation and larger reedbeds. As a result of the natural restoration processes occurring during the recent years the importance of both marshes is increasing as breeding sites and staging areas for both migrating and moulting wildfowl species.

In addition, the smaller wetlands of artificial origin like Petarch fish-ponds and Bezden reservoirs (one of the latter is an old natural marsh), in spite of their smaller size, also hold rich species complex during migration and winter, as well as during breeding season (incl. *Botaurus stellaris* and *Aythya nyroca*). The wetlands by Bezden village rarely freeze because of being fed by natural karst springs and constant water flow. This makes them important in cold winters when the rest of the wetlands in the Sofia region are frozen.

Except for the local breeding avifauna, due to its large biological diversity the Dragoman Marsh Karst Complex provide foraging areas for a number of rare and endangered species of birds breeding in its close vicinities – Black Stork, various species of birds of prey (see also justification of Criterion 2). See also point 22.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Continental biogeographic region

b) biogeographic regionalisation scheme (include reference citation):

The Biogeographical Regions Map of Europe, The European Topic Centre on Nature Protection and Biodiversity, 2008, <http://biodiversity.eionet.europa.eu/>

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Surface area:

In the area the surface is covered by limestone together with sandy – clay, coals and mergelitic sediments.

General geology and geomorphical features:

In the proposed area there are rocks from different geologic periods of time such as Triassic, Jurassic and Late Cretaceous epochs. Main part of the area is backed by quaternary alluvial, alluvial-delluvial and proalluvial sediments.

General soil types:

In the whole area there are several soil types as:

Alluvial and alluvial – meadow and sandy loamy soils;

Leached chernozem-smolnitza, clay;

Meadow chernozem-like heavy loam to slightly clayey;

Leached cinnamonic forest;

Rendzinas (humus - calcareous).;

Climate:

The climate in the region is temperate-continental with a mean temperature between -2 (in January) to 24 (in July). Annual precipitation is 575-600 mm. The relative air humidity is 75%. The predominant winds are with west and northwest direction with average monthly speed between 2 - 2.5 m/s.

Water depth and fluctuations:

The depth of the water in the Dragoman and Aldomirovtsi Marshes is an average of 1-1.5 meters in the central parts (up to 2 meters in some years and seasons). The levels fluctuate every year (up to 70 cm) - with early spring normally the highest and late summer the lowest. In early spring extensive areas of meadows around the two marshes and close to Tsraklevtsi and Bezden are temporarily flooded.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The main features of the complex (Dragoman and Aldomirovtsi Marshes and Tsraklevtsi wet meadows) are located in three closed depressions. The catchment areas are relatively small and included almost completely in the site. Their physical features are similar to the described in point 16.

The complex belongs to three bigger catchment areas – Izvor Granichen (Border spring), Izvor Slivnishki (Slivnishki spring) and Izvor Perachka (Perachka spring). The first one (Izvor Granichen) is a part of the Nishava river catchments area, the others two are part of the Iskar river catchments area. These two main catchments areas (Nishava and Iskar catchments areas) are part of the Danube river basin system.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The wetlands in the site play an important role for ensuring good water quality to the people from the 4 municipalities. Karst spring in the area provide potable water to more than 10 villages. The Dragoman Marsh partially cleans the untreated wastewater of Dragoman town (3600 inhabitants), but the construction of a wastewater treatment plant is urgent.

The area around the upper course of river Blato takes up the high waters and plays an important role in flood control downstream (Petarch village and Kostinbrod town).

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar “Classification System for Wetland Type” present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Inland: L • M • N • O • P • Q • R • Sp • Ss • Ip • Is • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

Ip (Permanent freshwater marshes/pools), 4 (Seasonally flooded agricultural land), Zk(b) (Karst and other subterranean hydrological systems), 1 (Aquaculture ponds), 6 (Water storage areas), Is (Seasonal/intermittent freshwater marshes), M (Permanent rivers), 9 (Canals and drainage channels)

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The following habitats are represented (according to Directive 92/43 EEC Annex I):

- 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation
- 40A0 * Subcontinental peri-Pannonic scrub
- 6110 * Rupicolous calcareous or basophilic grasslands of the *Alyso-Sedion albi*
- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
- 62A0 Eastern sub-Mediterranean dry grasslands (*Scorzoneralia villosae*)
- 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- 6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)
- 7220 * Petrifying springs with tufa formation (*Cratoneurion*)
- 7230 Alkaline fens
- 8210 Calcareous rocky slopes with chasmophytic vegetation
- 8310 Caves not open to the public
- 9150 Medio-European limestone beech forests of the *Cephalanthero-Fagion*
- 9170 *Galio-Carpinetum* oak-hornbeam forests
- 91H0 * Pannonian woods with *Quercus pubescens*
- 91M0 Pannonian-Balkan turkey oak –sessile oak forests

Also in the area there are arable lands, forest plantains, and 1 big limestone quarry (see point 26a).

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The plant species are well studied. For many wetland-related species the site is the most important on national level (status given in Bulgaria according to the Bulgarian Red Data Book, new edition, in press):

1. *Aldrovanta vesiculosa* – Critically endangered (CR). In Bulgaria the Dragoman Marsh Karst Complex possibly holds 100% of the population. In 1988 the species was discovered at the Srebarna Lake but since then it has not been spotted there anymore.
2. *Fritillaria meleagroides* – Critically endangered (CR) species. In Bulgaria there are two places but Dragoman Marsh Karst Complex has 90% of the whole population.
3. *Salix rosmarinifolia* – Critically endangered (CR) species and 100 % of the population is located in the wet meadows around Tsraklevtsi village. In the past another location was the Choklyovo Marsh but now this species is extinct there.
4. *Pedicularis palustris* – Critically endangered (CR) species. In the wet meadows around Tsraklevtsi village is around 20% of the whole population in the country.
5. *Lathyrus palustris* – Critically endangered (CR) species and 100% of the Bulgarian population is located in the wet meadows around Tsraklevtsi village.
6. *Plantago maxima* – Critically endangered (CR) species and 100 % of the Bulgarian population is located in the wet meadows around Tsraklevtsi village. The next nearest location of the species is Sibiu town in Romania.
7. *Viola pumila* – Critically endangered (CR) species. In Bulgaria there are two places but Dragoman Marsh Karst Complex has 95% of the whole population.

The whole area is very important for plant species and has many rare, endemic species and unique plant communities. The Chepan karst mountain and the other karst hills in the proposed Ramsar site are localities of many endemic and relict plant species (status given in Bulgaria according to the Bulgarian Red Data Book, new edition, in press):

1. *Sparganium minimum* Fries. – rare
2. *Caldesia parnassifolia* (Basi) Parl. – disappeared (program for reintroduction)
3. *Allium cupani* Rafin. – rare
4. *Tulipa urumoffii* Hayek. –endangered, Bulgarian endemic
5. *Anemone sylvestris* L. – endangered
6. *Paeonia tenuifolia* L. – endangered
7. *Erysimum comatum* Panč. – rare, Balkan endemic
8. *Malcomia serbica* Panč. – rare, Balkan endemic
9. *Astragalus wilmotianus* Stoj. – rare, Bulgarian endemic, included in the European list of rare, endangered and endemic plant species
10. *Vicia dumetorum* L. – rare
11. *Polygala hospita* Heuff. – rare
12. *Elatine alsinastrum* L. – rare, included in the European list of rare, endangered and endemic plant species
13. *Hippuris vulgaris* L. – rare
14. *Eryngium palmatum* Panč. et Vis. – rare, Balkan endemic
15. *Cachrys alpina* Bieb. – rare
16. *Laserpitium siler* L. – rare
17. *Verbascum eriophorum* Godr. – rare, Balkan endemic
18. *Digitalis laevigata* Waldst. et Kit. – rare
19. *Utricularia vulgaris* L. – rare
20. *Utricularia minor* L. – endangered
21. *Edraianthus serbicus* (Kern.) Petr. – rare, Bulgarian endemic, included in the European list of rare, endangered and endemic plant species (VU)

22. *Jurinea tzar-ferdinandii* Dav. – rare, Bulgarian endemic, included in the European list of rare, endangered and endemic plant species
23. *Tragopogon balcanicus* Vel. – rare, Balkan endemic
24. *Minuartia bulgarica* (Vel.) Graebn. – Bulgarian endemic
25. *Sempervivum erythraeum* Vel. – Bulgarian endemic, included in the European list of rare, endangered and endemic plant species
26. *Ferula heuffelii* Grseb. – rare, Balkan-Carpathian endemic

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Dragoman Marsh karst complex is one of the most important areas for Bulgarian wild fauna and has a significant biodiversity and conservation value.

Below information is presented for some rare birds in Bulgaria and Europe, which inhabit the Dragoman Marsh Karst Complex:

Podiceps nigricollis – recently confirmed breeding after more than 100 years break in Sofia region and Western Bulgaria as a whole;

Botaurus stellaris – important on a national scale population (9-12 pairs, which forms around 20% of the national total);

Egretta alba – the only breeding locality in the country away from the Danube River (7-9 pairs) - one of the southernmost breeding localities in Europe (Bulgaria lies on the southern limit of the species' breeding range); breeds in a mixed heronry with *Ardea purpurea* (8-12 pairs) and *Ardea cinerea* (1-2 pairs);

Aythya nyroca – the largest breeding locality of the species in Western Bulgaria and Sofia basin in particular (25-35 pairs); important stopover during migration;

Crex crex – the wet grasslands support the species during the breeding season (30-50 pairs) and migration;

Gallinago gallinago – the only locality with recently proven breeding in the country;

Sturnus roseus – an important stopover during migration, especially in spring;

From conservation point of view 75 bird species are listed in Annex I of the Birds Directive 2009/147/EC, 17 in the Bulgarian Red List (1985), 17 in the IUCN Red List and 108 species in the Bulgarian Red Data Book (new edition, in press).

Mammals: There are 43 mammal species recorded up to now in the proposed area. 8 species are from the IUCN redlist and 17 from Annex 2 of the Habitats Directive 92/43 EEC.

Invertebrates: The whole area is an Important Butterfly Area and up to now 243 butterfly species have been found, 3 of them are NATURA 2000 species from Directive 92/43 EEC - *Lycena dispar*, *Polyommatus eroides* and *Eriogaster catax*.

Amphibians - 9 species found and 2 of them are from Annex II from Directive 92/43 EEC – *Triturus karelinii* and *Bombina variegata*.

Reptiles – 11 species are found in the area as 2 of them (*Emys orbicularis*, *Testudo hermanni*) are from Annex II from Directive 92/43 EEC and *Testudo hermanni* is a NT species by IUCN classification.

For more information please see Annex 3.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The proposed area is a place of archeological, historical and social value.

The history of civilized inhabitants in the region dates back from the 3rd century BC. The stone cravings, old bricks, clay pots and other different materials can be still found in the region. They testify the spiritual culture of the Thrace. The highest peak of Chepan Mountain - Petrovski Krast (1206 m) was a Thracian rock sanctuary. Here first the Thracians then the Slavs and the Bulgarians worshipped their gods and made sacrifices for their war victories. The establishment of a permanent settlement during the during the Roman times is connected primarily with the construction of "Via Militaris ", a military road. Marked by milestones, it passes at the foothills of the Chepan and leads to the town of Sofia. From the 12th to the 14th century AD, a lot of churches and monasteries have been built in the nowadays Dragoman municipality. The region possesses one of the oldest well decorated Bulgarian churches. Their murals are true masterpieces of art, which signify the importance of these holy monuments for the Christian cultural and spiritual life.

Due to the development of this area close to the capital the local communities have almost completely lost their link to the wetlands, except for their use for sports fishing. The Petarch Fishponds, once a model for extensive fisheries, is in very bad condition and restoration of the traditional practices is needed. Lately the development of nature-friendly tourism linked to the wetlands is starting and could be an important income to local people.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland: a project for using the Dragoman marsh vegetation as source of renewable energy is being developed by Balkani Wildlife Society.
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

- a) within the Ramsar site: State, municipality, private.
- b) in the surrounding area: State, municipality, private.

25. Current land (including water) use:

a) within the Ramsar site: Nature conservation, arable land, fishery, forestry, hunting, grazing, irrigation, quarry.

b) in the surroundings/catchment: Arable land, fishery, forestry, hunting, grazing, irrigation, quarry, urbanization, industry.

Populated areas :

- In the site - Golemo Malovo, Rayanovtsi, Malo Malovo, Vasilovtsi, Tsraklevtsi, Ponor villages
- Within few km from the site: towns of Dragoman and Slivnitsa, villages of Aldomirovtsi, Bogiovtsi, Petarch, Bezden, Opitsvet, Izvor, Drenovo, Beledie Han, Buchin Prohod.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) within the Ramsar site:

In 19th century the Dragoman Marsh was the biggest limestone marsh in Bulgaria. It was one of the most important places in Bulgaria for the Crane (*Grus grus*), both in terms of breeding and migration (old records for thousands migrating Cranes in Sofia district exist). Unfortunately during the 1930s the whole marsh was drained. Canals, drainage channels and pump station were built and the whole area was changed into arable land. Subsequently a lot of rare species in the area got extinct. After the 1990s all types of drainage activities stopped and the Dragoman Marsh slowly started to recover and nowadays almost all rare and endemic species are recovered or increasing.

The Protected area Aldomirovtsi Marsh has the same history but it disappeared in late 80s of the 20th century, possibly due to military maneuvers affecting the karst. Currently it is recovered and a lot of rare birds started nesting there.

The untreated wastewaters of Dragoman Marsh are discharged into the Dragoman Marsh. This worsens the water quality and is a very serious threat to biodiversity, as can lead to eutrophication of the wetland.

One of the biggest problems and threats in the region is the big quarry, which destroys habitats for birds and natural landscapes between Dragoman and Aldomirovtsi Marsh. The quarry is located within the boundaries of proposed Ramsar site. The quarry is granted concession for open mining of construction materials - limestone from the "Dramski vrah" deposit. The concession agreement was signed on 23.11.2007, but the concession contract entered into force on 15.03.1999 with concession period for 25 years and the concession area is in the amount of 330,841 sq. m.

In addition, a lot of unique forests were replaced by European Black Pine (*Pinus nigra*), which dries and changes the soil and surface structure.

b) in the surrounding area:

Most of the surrounding area was changed into arable land for agriculture, urbanized areas. There are still some forested areas and abandoned pastures.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

The Aldomirovtsi marsh is an existing protected area according to the Bulgarian legislation – Protected site "Aldomirovtsko blato", which covers about 130 ha. In September 2008 a NATURA 2000 site for the protection of birds BG0002001 "Rayanovtsi" was designated with order by the Minister of Environment and Water. An official order for the designation of Natura 2000 site BG000322 "Dragoman" for the protection of habitats and wild flora and fauna is expected to be issued. The area of the Ramsar site is almost completely included in the site BG000322 "Dragoman" and partially overlaps with the site BG0002001 "Rayanovtsi". See also point 7.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

Not yet.

A management plan for the NATURA 2000 sites will be prepared.

d) Describe any other current management practices:

Other current management practices include the following carried out by Balkani Wildlife Society:

- Annual monitoring of species of the entire Ramsar site;
- Birdringing at the Dragoman marsh;
- Water reed removal at the Dragoman marsh;
- Plants reintroduction - After drainage of the Dragoman marsh, several plants disappeared from the Bulgarian flora. Two of them - *Aldrovanda vesiculosa* and *Caldesia parnassifolia* are in process of reintroduction. Due to improved conditions in the marsh, *Aldrovanda vesiculosa* is now developing successfully in its natural habitat. The white water lily (*Nymphaea alba*) is also successfully reintroduced after its extinction from the marsh.
- Aforestation with local tree species - *Quercus pubescens*, *Quercus robur* and *Salix sp.* are annually organized with participation of local people.
- Information plates at the Dragoman marsh designating fishing spots, litter bins for visitors and information tablets presenting key species in the marsh.
- Tourist infrastructure is also constructed.
- Education events are organized every year in the proposed Ramsar area.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

An official order for the designation of Natura 2000 site BG000322 "Dragoman" for the protection of habitats and wild flora and fauna is expected to be issued. Then a management plan for the NATURA 2000 sites will be prepared.

A wastewater treatment plant of the town of Dragoman should be constructed before 2014. But stopping the contamination of the Dragoman Marsh with wastewater is proposed earlier (2011-12).

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The following groups are very well studied:

- Birds
- Otter and suslik
- Butterflies
- Endemic plants of the Chepan Mountain
- Wetland-related plants
- Forests
- Other natural habitats

The following monitoring activities are carried out:

- Bird monitoring – monthly bird counting in the whole area is conducted by scientists from Institute of zoology and environmentalists from “Balkani wildlife society”.
- Bird ringing - conducted by scientists from Institute of zoology;
- In spring and autumn months, bird migrations researches have been conducted for the last 10 years.
- Bat and butterfly monitoring conducted by scientists from Institute of zoology and the National museum of natural history.

A Wetland Conservation Centre is constructed by Balkani Wildlife Society in Dragoman town.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Facilities accessible from the road between the town of Dragoman and Golemo malovo village provide opportunity for recreational activities at the Dragoman marsh. Two nature trails (500 m), a bird hide and a watchtower have been constructed to provide visitors access and a good view of the marsh. Information plates are positioned along the path, designating different species in the area.

A tourist trail at Chepan Mountain has been marked, and two information plates are placed.

Different information booklets about the importance of wetlands and its protection have been published annually since 2003 and distributed among locals, students, volunteers and other target groups.

A 20 minute documentary film about the Dragoman marsh has also been produced and disseminated.

"Dragoman marsh" Wetland Conservation Centre opened in 2009. Currently the building is reconstructed and has an interactive exhibition. The visitors centre will be the first one in Bulgaria which will be intended for wetlands protection.

A website with information and coordination purpose is being prepared: www.balkani.org/wetlands.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Currently the site is well-known among birdwatchers, scientist and students. They are the main visitors of the area. The Dragoman marsh and its surroundings are used for summer volunteer camps and different education purposes.

Frequency of tourists is much lower than the carrying capacity of the area, which is not developed yet as a tourist destination. The opening of the Wetland conservation centre in addition to the available infrastructure at the Dragoman Marsh will facilitate further effort in tourism development of the entire Ramsar area.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

The proposed area is under jurisdiction of 4 municipalities – Dragoman, Slivnitsa, Godech and Kostinbrod. All of them are under Sofia district jurisdiction. The responsible environmental authority is the Sofia Regional Inspectorate of Environment and Water.

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

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34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

The Biogeographical Regions Map of Europe, The European Topic Centre on Nature Protection and Biodiversity, 2008, <http://biodiversity.eionet.europa.eu/>

- DELOV, V., P. IANKOV, N. PETKOV, P. SHURULINKOV, S. VELKOV. 2007. Rayanovtsi. – In: Kostadinova, I., M. Gramatikov (eds.) 2007. *Important Bird Areas in Bulgaria and Natura 2000*. Bulgarian Society for the Protection of Birds, Conservation Series, Book 11. Sofia. Pp. 120-122. [Bilingual: Bulgarian-English]
- HRISTOV, K., P. SHURULINKOV, A. RALEV, I. ZAFIROV. 2008. Great White Egret – A New Breeding Species of a Mixed Heronry at Dragoman Marsh, Western Bulgaria. *Acta zool. bulg.* 60, 2: 209-212.
- IANKOV, P. (ed.) 2008. *Atlas of Breeding Birds in Bulgaria*. Bulgarian Society for the Protection of Birds, Conservation Series, Book 10. Sofia. 679 pp.
- MIRKOV, I. 1984. Breeding of the Woodchat Shrike (*Lanius senator* L.) in Sofia region. *Orn. Inf. Bull.* 15/16: 70-74. [In Bulgarian]
- NANKINOV, D. 1982. The Birds in Sofia. *Orn. Inf. Bull.* 12: 1-386. [In Bulgarian]
- NANKINOV, D., P. SHURULINKOV, B. NIKOLOV, I. NIKOLOV, I. HRISTOV, R. STANCHEV, S. DALAKCHIEVA, A. DUTSOV, M. SAROV, A. ROGEV. 2004. Waterfowl birds (*Anseriformes*) on the wetlands around Sofia. Bulgarian Ornithological Centre, Inst. Zool., BAS, Sofia. 136 pp. [Bilingual: Bulgarian-English]
- NANKINOV, D., P. SHURULINKOV, I. NIKOLOV, B. NIKOLOV, S. DALAKTCHIEVA, I. HRISTOV, R. STANCHEV, A. ROGEV, A. DUTSOV, M. SAROV. 1998. Studies of the waders (*Charadriiformes*) on the wetlands around Sofia (Bulgaria). *Riv. ital. Orn.* 68, 1: 63-83.
- NIKOLOV, B. P. 2000. An investigation of nest building and nests of the Red-backed Shrike (*Lanius collurio*) in Bulgaria. *Ring* 22, 1: 133-146.
- NIKOLOV, B. 2004. Reproductive Rates of the Red-backed Shrike (*Lanius collurio*) (Aves: Laniidae) in the Sofia Region, Western Bulgaria. *Acta zool. bulg.* 56, 1: 75-82.
- NIKOLOV, B. 2005. Reproductive success of the Woodchat Shrike (*Lanius senator*) in Western Bulgaria. *Ornis Fennica* 82: 73-80.
- NIKOLOV, I., S. VELKOV, R. STANCHEV, I. HRISTOV, P. SHURULINKOV, H. DINKOV. 2004. Moustached Warbler *Acrocephalus melanopogon*. *Acrocephalus* 25, 123: 235-236.
- NIKOLOV, S. 2006. New data on the Birds of Ponor Mountains, (W Bulgaria). *Acrocephalus* 27, 128/129: 301-302.
- NIKOLOV, S., I. IVANOV, I. ANGELOV. 2007. New data on roosting sites of the Raven *Corvus corax* in Bulgaria. *Acrocephalus* 28, 135: 168-169.
- NIKOLOV, S., V. VASSILEV. 2004. Breeding bird atlas of the Ponor Mountains, western Bulgaria. *Sandgrouse* 26, 1: 7-22.
- SHURULINKOV, P., N. CHAKAROV. 2007. Blood Parasite Infections of Some Passerine Migratory Birds during Autumn Migration through West Bulgaria. *Acta zool. bulg.* 59, 3: 301-308.
- SHURULINKOV, P., I. HRISTOV, K. HRISTOV, I. NIKOLOV, B. NIKOLOV, S. VELKOV, H. DINKOV, A. RALEV, N. CHAKAROV, D. RAGYOV, R. STANCHEV, L. SPASSOV, I. HRISTOVA. 2007. Birds of Dragoman Marsh and Chepun hills, Western Bulgaria - List, Status and Recent Development of Water Birds Populations. *J. Balkan Ecol.* 10, 3: 251-264.
- SHURULINKOV, P., I. NIKOLOV, G. DASKALOVA, B. NIKOLOV, G. STOYANOV. 2008. Further range expansion of the Isabelline Wheatear *Oenanthe isabellina* in Bulgaria. *Ciconia* 16: 49-56.
- SHURULINKOV, P., B. NIKOLOV, P. STATKOV, I. HRISTOVA, A. RALEV, H. DINKOV, K. HRISTOV, I. HRISTOV. 2006. Erster sicherer Brutnachweis des Schwarzhalstauchers nach über einem Jahrhundert in der Sofia-Ebene, Bulgarien. *Orn. Mitt.* 58, 11: 376-379.
- STOYANOV, G. 2001. The Birds of Ponor Mountain. *Forestry ideas* 7, 1/4: 100-125. [In Bulgarian]

- БОНДЕВ, И., 1991. РАСТИТЕЛНОСТТА НА БЪЛГАРИЯ. КАРТА В М 1:600 000 С ОБЯСНИТЕЛЕН ТЕКСТ. С.
- БОНЧЕВ, Г., 1929. БЛАТАТА В БЪЛГАРИЯ. - МИН. НА ЗЕМЕДЕЛИЕТО И ДЪРЖАВНИТЕ ИМОТИ, С.:26-75
- ВЕЛЧЕВ, В., /ОТГ. РЕД./, 1984. ЧЕРВЕНА КНИГА НА Н Р БЪЛГАРИЯ, ТОМ 1, РАСТЕНИЯ., С., БАН
- ЙОРДАНОВ, Д., 1931. ФИТОГЕОГРАФСКИ ИЗУЧАВАНИЯ НА БЛАТАТА В БЪЛГАРИЯ ВЪВ ВРЪЗКА С ВИСШАТА ИМ РАСТИТЕЛНОСТ. ЧАСТ I – ВЪТРЕШНИ БЛАТА. - ГОД. СУ (ФИЗ.-МАТ. ФАК.), 27, 3,: 75-156
- КОЧЕВ, Х., Д. ЙОРДАНОВ, 1981. РАСТИТЕЛНОСТТА НА ВОДОЕМИТЕ В БЪЛГАРИЯ. ЕКОЛОГИЯ, ОХРАНА И СТОПАНСКО ЗНАЧЕНИЕ, С.
- ПЕТРОВА, А. 2005. ЧЕРВЕНИ СПИСЪЦИ НА ФЛОРАТА НА БЪЛГАРИЯ. ФИНАЛЕН ДОКЛАД В МОСВ.
- TZONEV, R., KARAKIEV, T. 2007. PLANTAGO MAXIMA (PLANTAGINACEAE): A RELICT SPECIES NEW FOR THE BULGARIAN FLORA. PHYTOLOGIA BALCANICA 13(3): 347-350.

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